

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A method of forming a solution film on an in-process substrate by using a dropping section for dropping liquid and ~~[[an]]~~ the in-process substrate just under said dropping section, maintaining the liquid dropped from said dropping section on said in-process substrate, and relatively moving said in-process substrate or said dropping section, wherein

a relative movement between said in-process substrate and said dropping section comprises rotating said in-process substrate and relatively moving said dropping section from an inner periphery of said in-process substrate toward an outer periphery of said in-process substrate for spirally dropping said liquid on said in-process substrate so that the move pitch of the dropping unit in the radial direction occurring in every revolution of the in-process substrate is fixed;

a rotational frequency w for said substrate is decreased so that the liquid dropped from said dropping section on said in-process substrate stays at a dropped position in accordance with relative movement of said dropping section from the inner periphery of said in-process substrate toward the outer periphery; and

a feed rate v for said liquid from said dropping section is increased in accordance with relative movement of said dropping section from the inner periphery of said in-process substrate towards the outer periphery.

2. (Previously presented) The film formation method according to claim 1, wherein when said dropping section is positioned to distance r from a center of said

in-process substrate, feed rate v for said liquid from said dropping section is determined in accordance with rotational frequency w for said in-process substrate so that a constant value is maintained for a product of rotational frequency w and feed rate v of said substrate support.

3. (Previously presented) The film formation method according to claim 2, wherein rotational frequency w_0 is assumed for an in-process substrate when said dropping section is positioned to radius R on said in-process substrate and feed rate v_0 is assumed for said liquid when said dropping section is positioned to distance r from a center of said in-process substrate center; and

when said substrate is positioned to said distance r , rotational frequency w for said substrate is determined by a product of the square root of (R/r) by w_0 and feed rate v is determined by v_0 divided by the square root of (R/r) .

4. (Previously presented) The film formation method according to claim 3, wherein when said in-process substrate is a disk-shaped substrate with radius R (mm), said dropping section drops liquid at the outmost periphery of said substrate and a rotational frequency (rpm) for said substrate is smaller than the square root of $1,000,000/R$.

5. (Original) The film formation method according to claim 4, wherein when said in-process substrate is a disk-shaped substrate 200 mm in diameter, said dropping section drops liquid at the outmost periphery of said substrate and a rotational frequency for said substrate is 99 rpm or less.

6. (Original) The film formation method according to claim 4, wherein when said in-process substrate is a disk-shaped substrate 300 mm in diameter, said

dropping section drops liquid at the outmost periphery of said substrate and a rotational frequency for said substrate is 81 rpm or less.

7. (Canceled)

8. (Original) The film formation method according to claim 1, wherein said dropping section includes a plurality of discharge openings for discharging liquid; and a discharge rate of said dropping section and a rotational frequency of said in-process substrate are determined by an average of displacements for a plurality of discharge openings.

9. (Original) The film formation method according to claim 1, wherein relative movement of said dropping section from the inner periphery of said in-process substrate toward the outer periphery corresponds to the relative movement of said in-process substrate from an approximate center toward the outer periphery; and relative movement of said dropping section from the outer periphery of said in-process substrate toward the inner periphery corresponds to relative movement of said in-process substrate from the outer periphery toward an approximate center.

10. (Original) The film formation method according to claim 1, wherein a region including an approximate center of said in-process substrate is used in such a manner that said dropping section moves in a column direction from one end to the other in said region including an approximate center and moves in a row direction outside said region including an approximate center based on the relative movement between said in-process substrate and said dropping section, and said dropping section supplies said in-process substrate with solution at feed rate v' to form a solution film.

11. (Previously presented) The film formation method according to claim 10, wherein said feed rate v' is set so that it almost equals feed rate v for liquid spirally dropped just outside said region including an approximate center.

12. (Original) The film formation method according to claim 1, wherein a region including an approximate center on said in-process substrate prevents a solution film from moving due to a centrifugal force applied to a dropped solution film by partially blocking liquid discharged from said dropping section so as not to reach said in-process substrate for droplet amount adjustment.

13. (Previously presented) The film formation method according to claim 1, wherein said liquid is one selected from the group consisting of a solution containing antireflection used for an exposure process, a solution containing photosensitive material, a solution containing low-dielectric material, a solution containing ferroelectric material, a solution containing electrode material, a solution containing pattern transfer material, a solution containing magnetic material used for a disk-shaped storage medium, and a solution containing a light absorptive/reactive material used for a disk-shaped storage medium.

14. (Original) The film formation method according to claim 1, wherein said in-process substrate with said solution film formed thereon is exposed under a pressure lower than a steam pressure at a process temperature for a solvent in said solution film, and said solvent is dried and removed to form a solid layer.

15. (Original) The film formation method according to claim 14, wherein said formed solution film is dried with vibration applied to form a solid layer having an almost flat surface.

16. (Original) The film formation method according to claim 1, wherein said in-process substrate with said solution film formed thereon is exposed to a current of air to dry and remove solvent in said solution film for forming a solid layer.

17. (Original) The film formation method according to claim 16, wherein said formed solution film is dried with vibration applied to form a solid layer having an almost flat surface.

18. (Original) A method of manufacturing a semiconductor element for forming said solid layer on said in-process substrate by using the film formation method described in claim 14, wherein

said in-process substrate is a semiconductor substrate and said solid layer is selected from at least one of an anti-reflection photosensitive film used for an exposure process, a low-dielectric film, an inter-layer insulator, a ferroelectric film, an electrode, and a pattern transfer film.

19. (Canceled)

20. (Original) The method of manufacturing a semiconductor element forming said solid layer on said in-process substrate by using the film formation method described in claim 16, wherein

said in-process substrate is a semiconductor substrate and said solid layer is selected from at least one of an anti-reflection photosensitive film used for an exposure process, a low-dielectric film, an inter-layer insulator, a ferroelectric film, an electrode, and a pattern transfer film.

21. (Canceled)

22. (Original) The method of manufacturing a disk-shaped storage medium forming said solid layer on said in-process substrate by using the film formation method described in claim 14, wherein said solid layer is a magnetic film or a light absorbent/reactive film.

23. (Original) The method of manufacturing a disk-shaped storage medium forming said solid layer on said in-process substrate by using the film formation method described in claim 16, wherein
said solid layer is a magnetic film or a light absorptive/reactive film.